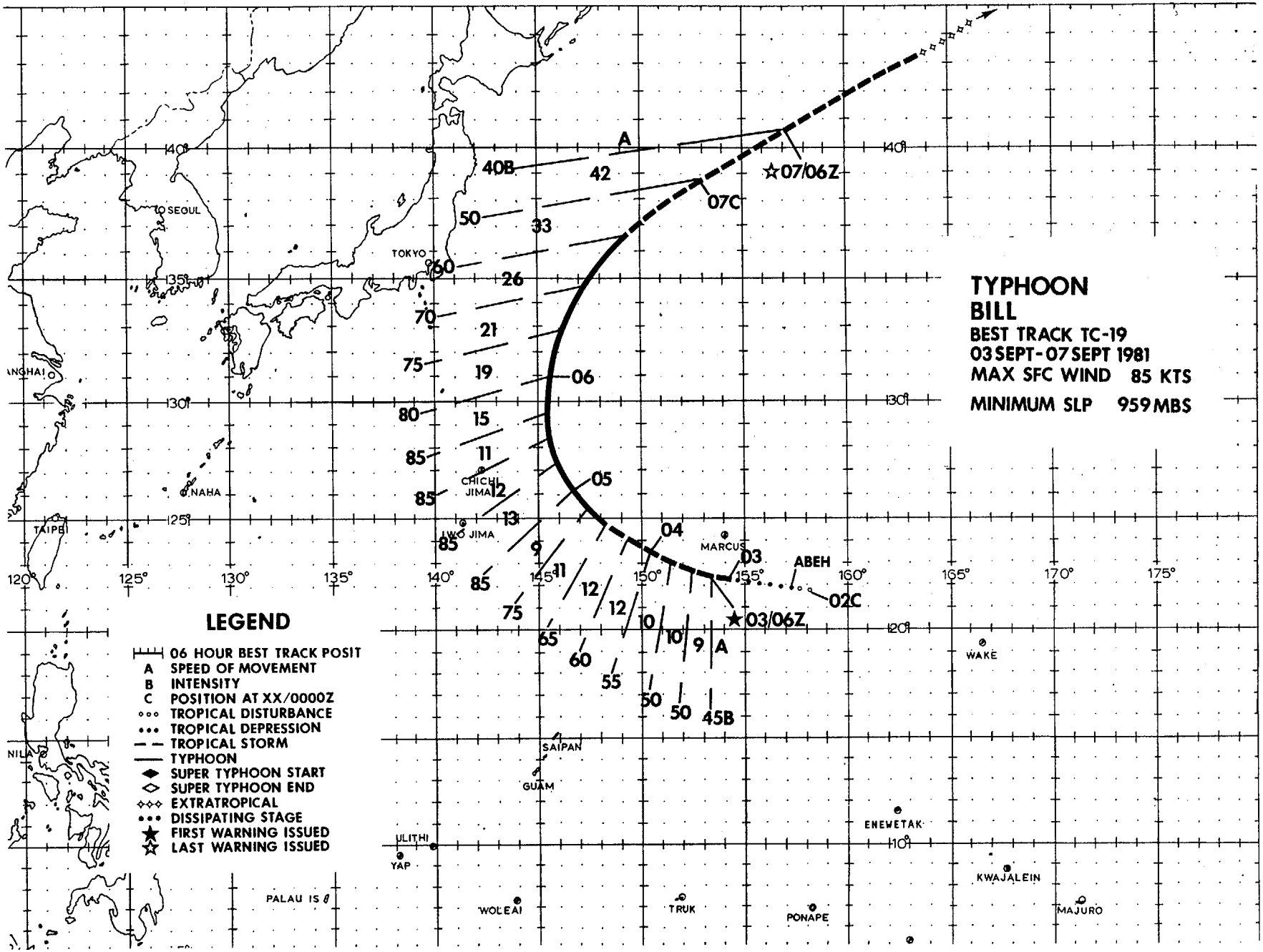
TYPHOON
BILL
BEST TRACK TC-19
03 SEPT-07 SEPT 1981
MAX SFC WIND 85 KTS
MINIMUM SLP 959 MBS
LEGEND
06 HOUR BEST TRACK POSIT
A SPEED OF MOVEMENT
B INTENSITY
C POSITION AT XX/0000Z
TROPICAL DISTURBANCE
TROPICAL DEPRESSION
TROPICAL STORM
TYPHOON
SUPER TYPHOON START
SUPER TYPHOON END
EXTRATROPICAL
DISSIPATING STAGE
FIRST WARNING ISSUED
LAST WARNING ISSUED
07/06Z
07C
03/06Z
02C
45B
SEOUL
TOKYO
NAHA
TAIPEI
IWO JIMA
CHICHI JIMA
MARCUS
ABEH
WAKE
SAIPAN
GUAM
ULITHI
YAP
WOLEAI
PALAU IS
TRUK
PONAPE
ENEWETAK
KWAJALEIN
MAJURO

Without the benefit of satellite data Typhoon Bill may have gone undetected since the initial disturbance formed 295 nm (546 km) east-southeast of Marcus Island (WMO 47991) and only came within 120 nm (222 km) of that island at 0600Z on 3 September. The disturbance was never discernible in the synoptic data observations from Marcus Island.

Bill remained a compact system throughout its duration. Figures 3-19-1 thru 3-19-4 illustrate the life cycle of Bill from a time near the first warning until its final hours.

The steering for Bill was provided by the flow around the mid-tropospheric sub-tropical anticyclone to the east. Speed of advance (SOA) forecasts were particularly good during the period of Bill's recurvature and eventual extratropical transition when Bill gradually entrained into the mid-latitude mid- and upper-level westerlies. Using a method developed by Burroughs and Brand (1973), operational SOA forecasts were extremely close to the post-storm analysis values.

Unlike larger storms which tend to create their own environment and move sub-tropical systems out of their way, Bill reacted to the environment and maintained a tight gradient between himself and the anticyclone until he was north of 28N at 051200Z, where weakening began. Once this occurred, the maximum observed wind speeds correlated quite well with the wind/pressure relationship of Atkinson and Holliday until extratropical transition occurred.

First detected at 010000Z September, Bill's convection covered a small area, approximately 150 nm (278 km) in diameter, and had an associated small mid-level cyclonic circulation. This mid-level system slowly built down to the surface and then deepened rapidly. Environmental pressures were generally near 1009 mb; however, aircraft reconnaissance at 030807Z found a 993 mb central pressure and winds of 70 kt (36 m/sec) northeast of the center. The Atkinson and Holliday (1977) wind/pressure relationship indicates that a 993 mb central pressure would support a mean maximum wind of 45 kt (23 m/sec). The higher wind speed in Bill was the result of an extremely tight pressure gradient between the storm and a subtropical ridge to the northeast.

FIGURE 3-19-1. Tropical Storm Bill at 50 kt (26 m/sec) intensity, 3 September 1981, 1605Z. This imagery shows that Bill was a compact system in the early stages. (NOAA 7 infrared imagery)

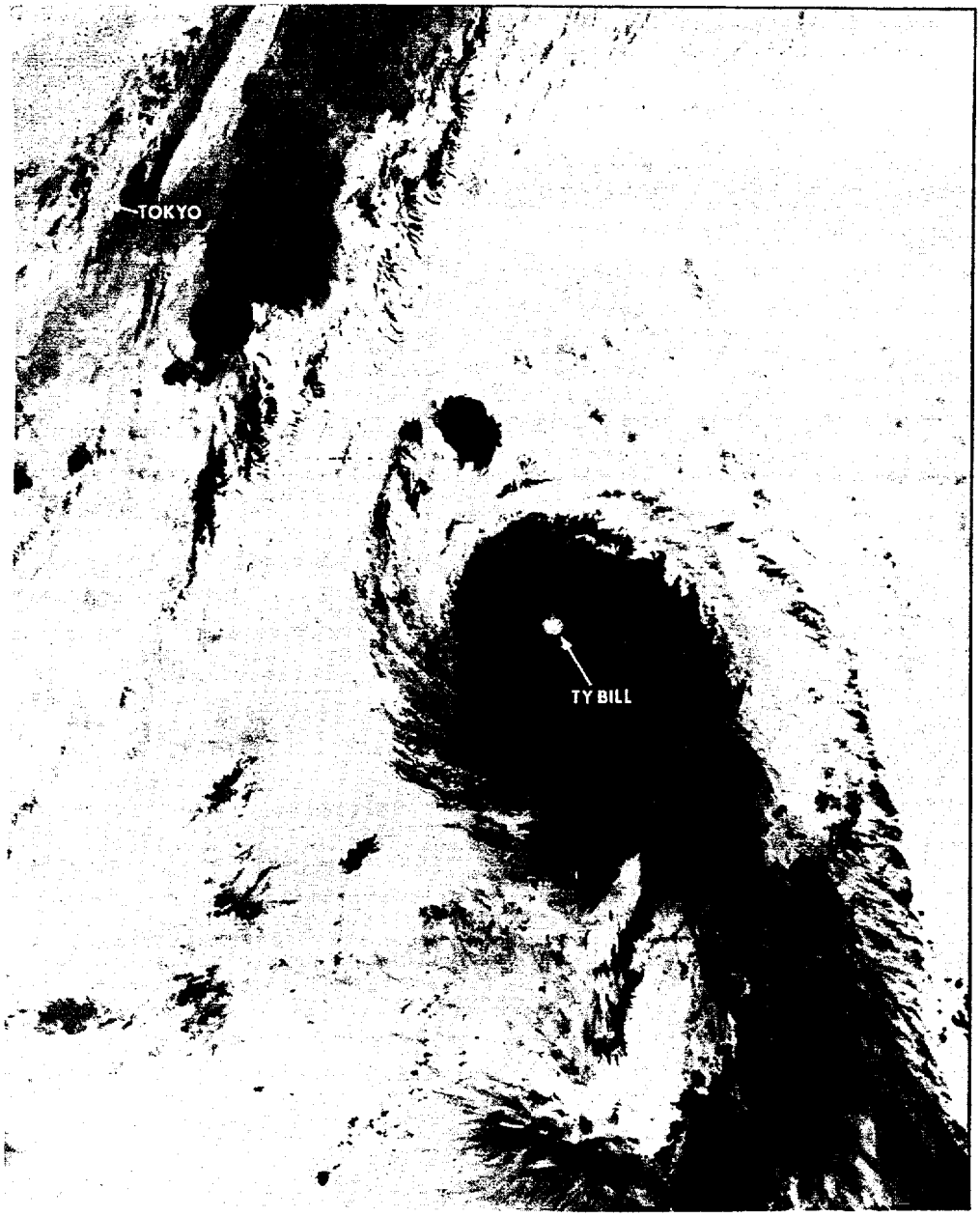

FIGURE 3-19-2. Typhoon Bill at 85 kt (44 m/sec) intensity, 5 September 1981, 1724Z. This imagery shows Bill at peak intensity has remained a compact system. (NOAA 7 infrared imagery)

FIGURE 3-19-3. Typhoon Bill at 75 kt (39 m/sec) intensity, 6 September 1981, 0428Z. Here Bill is beginning to entrain cold air from the frontal system to the north. (NOAA 7 visual imagery)

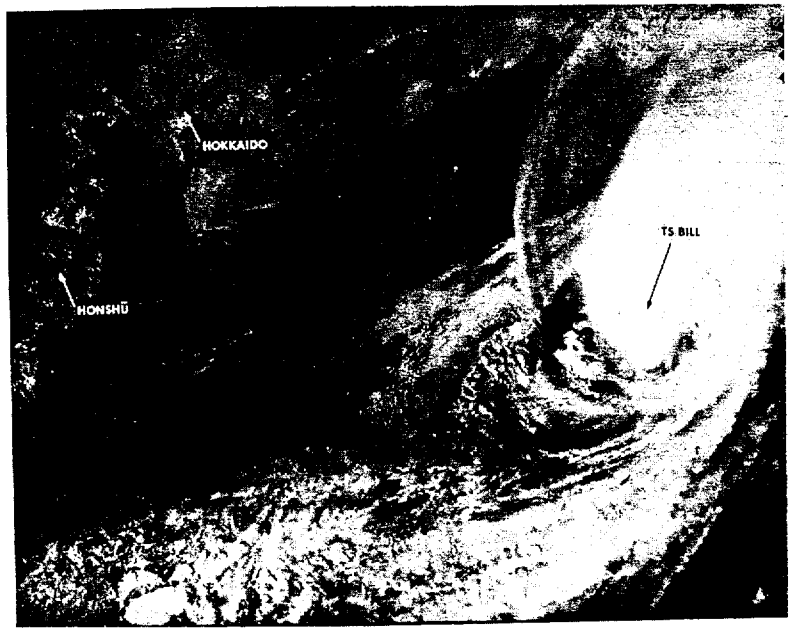

FIGURE 3-19-4. Tropical Storm Bill at 40 kt (20 m/sec) intensity, 7 September 1981, 0416Z. This imagery shows Bill just prior to the issuance of the last warning and the extratropical transitioning is almost complete. (NOAA 7 visual imagery)